AMENDMENTS TO THE SPECIFICATION:

Page 1, before line 4, insert the following as separate paragraphs:

--BACKGROUND OF THE INVENTION

1. Field of the Invention--.

Page 1, before line 9, insert the following as a separate paragraph:

2. Description of Related Art--.

Page 4, before line 23, insert the following as a separate paragraph:

--BRIEF SUMMARY OF THE INVENTION--.

Please amend the paragraph beginning at page 4, line 27, as follows:

In accordance with a first aspect of the present invention, there is provided ~~An~~ an optical communication system including an optical communications route comprising system fibre or a laser pigtail fibre having a given mode field radius at an operating wavelength of the system, an optical route component for performing a function within the optical system, said optical route component forming part of the optical communications route and being connected to the system fibre or the laser pigtail fibre, and enclosed in a sealed container, the optical route component providing an optical output which passes along the system fibre or the laser pigtail fibre from the container, the output of the optical route component passing through a mode field transformer and

thence along the system fibre or the laser pigtail fibre, the mode transformer including a section of optical fibre disposed at a location downstream of said container and serving to increase locally the mode field radius at said wavelength, the optical system being operated with an optical power density in the system fibre or the laser pigtail fibre above a level at which optical power induced damage can propagate in the system fibre or the laser pigtail fibre, the mode transformer reducing the optical power density for said given power level such that within the mode transformer the power density is reduced below the threshold level, so that in the event that optical power induced damage occurs in the system fibre or the laser pigtail fibre downstream of said mode transformer the damage is prevented from propagating into the optical route component.

Please amend the paragraph beginning at page 5, line 18, as follows:

In accordance with a second aspect of the present invention, there is provided an optical device for use in a system ~~according to claim 1~~, said device including an optical route component for performing, in use, a function within the optical system, and being enclosed in a sealed container, the optical route component having a fibre pigtail for connection to a downstream optical fibre of said system, the optical route component providing an optical output having in said fibre pigtail a given mode field radius at an operating wavelength of said device; the device further including a mode field transformer a mode field transformer including a section of optical fibre, the mode field transformer being disposed at a location downstream of said container between said

container and said fibre pigtail, said mode field transformer having a mode field radius at said wavelength substantially larger than said given mode field radius and being sufficiently large to reduce at said location the optical power density of said optical output to below the threshold level at which optical power induced damage can occur in said pigtail fibre downstream of said mode field transformer, thereby, in the event that optical power induced damage occurs in the pigtail fibre, preventing the damage from propagating into the optical route component.

Page 7, before line 29, insert the following as a separate paragraph:

B7 --BRIEF DESCRIPTION OF THE DRAWINGS--.

Please amend the paragraph beginning at page 8, line 15, as follows:

B8 Detailed description of Exemplary Embodiments.

Please amend the paragraph beginning at page 8, line 17, as follows:

Referring to the drawings, FIG. 1 shows an optical device 10 including an optical component 12 housed in a container 14. The optical component 12, in FIG. 1 is a conventional packaged optical amplifier. The active element 20 comprises a length of

B9 erbium doped fibre, typically several meters long coiled on a mandrel (not shown). A pump laser 11, and a power supply 13 for the pump laser ~~13~~ 11 are also provided. The output from the pump laser is fed into a multiplexing coupler 22 and, via the coupler is

introduced into the length of erbium doped fibre in a clockwise direction. The output from the coupler carrying the pump light is fusion spliced to the length of erbium doped fibre. Light from the pump laser 11 in the length of doped fibre 20 excites the erbium atoms, raising them to a higher energy level.

Please amend the paragraph beginning at page 9, line 29, as follows:

For given fibre parameters, the mode field radius can be increased if the core diameter is reduced sufficiently. This may be achieved, for example, by providing a waist portion in a ~~sectin~~ section of optical fibre. Increasing the mode field radius will, for a given power level, reduce the power density. The inventors of the present invention have applied this knowledge to the problem of ~~self-focussing~~ self-focusing catastrophic damage and have realised that it is possible to provide a means to limit the propagation of such damage. By incorporating a section of fibre having a waist portion having a sufficiently small core diameter or cross sectional area, at an appropriate point in a transmission link, it is possible to halt at that point any self-~~focussing~~focusing catastrophic damage which reaches that point. However, during routine operation, high power levels can pass through the point without any power-limiting effect (in contrast with optical fuses of the type taught in EP-A-0 943 954).

Please amend the paragraph beginning at page 15, line 14, as follows:

The mode field radius transformer may include various means. The mode field radius transformer includes a section of optical fibre. The section of optical fibre includes a waist portion. Preferably, the waist portion has a diameter or ~~crossectional~~ cross-sectional area that is lower than the diameter or cross sectional area of the system fibre or of the fibre pigtail. The section of optical fibre is spliced using conventional techniques to system fibre or to a fibre pigtail. The section of optical fibre, the system fibre and the fibre pigtail preferably include a glass composition. The section of optical fibre included in the mode field radius transformer, preferably, in addition to the waist portion may include, in addition two further portions of optical fibre between which the waist portion is disposed. The diameter or cross sectional area of the waist portion ~~os~~ is lower than the diameter or cross sectional area of the two portions between which the waist portion is located.

B11

Please amend the paragraph beginning at page 15, line 26, as follows:

The mode field radius transformer, as mentioned previously is formed by heating and drawing a section of optical fibre. The cross sectional area along the longitudinal axis of the drawn section of optical fibre varies in accordance with the conditions under which it is ~~was~~ formed. However, the cross sectional area is at a maximum at the points at which the section of optical fibre is held, and is at a minimum between the two end

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portions. The cross sectional area may vary continuously along the longitudinal axis from the waist portion to each end.

Please amend the paragraph beginning at page 20, line 1, as follows:

As discussed above, damage initiated will propagate in a direction towards the source of the optical power. In the route shown in FIG. ~~2~~3, the source of the optical power is the transmitter component 32. Thus, damage will generally propagate towards the transmitter. Thus, it will be understood that it is unlikely that damage is likely to occur to a receiver component 34. However, should damage be initiated in the receiver component, a fuse may preferably be provided near the input of the receiver to protect optical fibre between receiver 38 and amplifier component 12.

Please amend the paragraph beginning at page 20, line 9, as follows:

With reference to Figure 4, it will be understood that further route components of an optical route that may be required to be protected are optical route fibres which carry optical signals between other route components, such as the transmitter 32, amplifiers 14, 42, 44 and the receiver 34. As mentioned previously, should catastrophic damage occur to an optical route, it may destroy optical fibre several kilometres long. Such disruptions to an optical route are both expensive to repair and represent lost data, lost revenue and an increased burden on remaining routes of an optical network while the damaged optical fibre is being replaced. In particular, communications routes may include components belonging to different networks. A route may originate in network 1 (50) and may

terminate in network 2 (52). Yet networks 1 (50) and 2 (52) may be operated by different network operators. In such situations, the network operator operating network 1 (50) may want to protect his network from catastrophic damage that may be initiated in network 2 (52), yet may propagate towards network 1 (50). Such protection is afforded by providing an optical fuse 23 between networks 1 (50) and 2 (52).

Please amend the paragraph beginning at page 21, line 28, as follows:

With reference to Figure 6, a pump laser 70 is shown. The pump laser includes a pump laser chip 72, a lensed fibre 74 which are both enclosed in a sealed container 70, the output 75 of the pump laser is connected to a laser pigtail fibre 78. A mode field transformer is disposed outside the sealed container 70 along the laser pigtail fibre. This arrangement has particular application for remote pump lasers for, in particular, submarine optical cables, where the pump laser is located on land and the laser pigtail fibre may be many kilometres long. Thus, in order to protect the relatively inaccessible laser pigtail fibre and more accessible, however costly pump laser from catastrophic damage, mode field transformers may be disposed at a location or locations along the laser pigtail fibre. The mode field transformers are not however limited for use only in remote pump lasers, but may also be incorporated into pump lasers for use in packaged amplifiers and optical sources.